



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,070	02/21/2002	Thomas F. Soules	120491 GEC 2 0610	.8560

7590

06/19/2003

Timothy E. Nauman, Esq.  
Fay, Sharpe, Fagan, Minnich & McKee, LLP  
Seventh Floor  
1100 Superior Avenue  
Cleveland, OH 44114-2518

EXAMINER

COLON, GERMAN

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 06/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

10/080,070

Applicant(s)

SOULES ET AL.

Examiner

German Colón

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☒ Claim(s) 19,20 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 19, 20 and 23 are objected to because of the following informalities:

Regarding claim 19, claim 19 refers to “the method of claim 13”, however, claim 13 is not a method claim. For the purpose of examination, claim 19 will be consider as dependent on method claim 15.

Regarding to claim 20, claim 20 is objected over the reasons stated in claim 19 because of its dependency status form claim 19.

Referring to claim 23, claim 23 refers to a “mixture including 9 grams of carbonates”, however, through the specification, references to “mixture comprising 9-16 milligrams of carbonates” are made. For the purpose of examination, the limitation of claim 23 will be consider as “9 milligrams”.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4, 5, 9, 10, 12, 15, 17, 19 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Yasuda et al. (US 5,629,586).

Regarding claim 1, Yasuda discloses a discharge lamp comprising: an envelope **FL**; a discharge-sustaining fill sealed inside the envelope; first and second electrodes **42** for providing a discharge, at least the first electrode including a current carrying wire **44** and a coil including:

a first structure formed by winding a overwinding wire around a first cylindrical member (see Fig. 4),

a second coil structure formed by winding the second coil structure around a second cylindrical member **50** (see Fig. 5),

a third coil structure formed by winding the second coiled structure around a third cylindrical member, the third cylindrical member having a diameter of at least 1.0 mm, and an emitter material deposited on the coil (see Col. 3, lines 40-43).

Regarding claim 4, Yasuda discloses the second coil having more than 80 turns per inch (see Col. 3, line 40).

Regarding claim 5, Yasuda discloses the second coil having more than 85 turns per inch (see Col. 3, line 40).

Referring to claim 9, Yasuda discloses a discharge lamp comprising: an envelope **FL**; a discharge-sustaining fill sealed inside the envelope; first and second electrodes **42** for providing a discharge, at least the first electrode including a coil including:

a first structure formed by winding a overwinding wire around a first cylindrical member (see Fig. 4),

a second coil structure formed by winding the second coil structure around a second cylindrical member **50** (see Fig. 5), the second structure having coils spaced to provide at least 80 turns per inch, and

Art Unit: 2879

a third coil structure formed by winding the second coiled structure around a third cylindrical member, and an emitter material deposited on the coil (see Col. 3, lines 40-43).

Referring to claim 10, Yasuda discloses the third cylindrical member having a diameter of 1 mm (see Col. 3, lines 41-43).

Referring to claim 12, Yasuda discloses the second coil having more than 90 turns per inch (see Col. 3, line 40).

Regarding claim 15, Yasuda discloses the method for forming a coil for a fluorescent lamp, the method comprising:

winding a wire around a first cylindrical member and a current carrying wire to form a first coiled structure;

winding the first coiled structure around a second cylindrical member to form a second coiled structure; and

winding the second coiled structure around a third cylindrical member to form a third coiled structure, the coiled structure having a diameter of at least 1 mm; and coating the third coiled structure with an emitter (see Figs. 3-5 and Col. 3, lines 19-43).

Regarding claim 17, Yasuda discloses the second coil structure having at least 80 TPI.

Referring to claim 19, Yasuda discloses the third cylindrical member having a diameter of 1 mm.

Referring to claim 21, Yasuda discloses the second coil structure having at least 90 TPI.

4. Claims 9 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Thomas (US 3,003,077).

Art Unit: 2879

Referring to claim 9, Thomas discloses a discharge lamp comprising: an envelope 13; a discharge-sustaining fill sealed inside the envelope; first and second electrodes 8 for providing a discharge, at least the first electrode including a coil including:

a first structure formed by winding a overwinding wire around a first cylindrical member (see Fig. 1 and Col. 2, lines 3-5, 11-14 and 19),

a second coil structure formed by winding the second coil structure around a second cylindrical member 6 (see Fig. 2), the second structure having coils spaced to provide at least 80 turns per inch (see Col. 3, line 41), and

a third coil structure formed by winding the second coiled structure around a third cylindrical member, and an emitter material deposited on the coil (see Fig. 3).

Referring to claim 12, Thomas discloses the second coil having more than 90 turns per inch (see Col. 3, line 41).

### ***Claim Rejections - 35 USC § 103***

¶ 7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

¶ 8. Claims 1-5, 8, 10, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas (US 3,003,077).

Regarding claim 1, Thomas discloses a discharge lamp comprising: an envelope 13; a discharge-sustaining fill sealed inside the envelope; first and second electrodes 8 for providing a discharge, at least the first electrode including a current carrying wire 9 and a coil including:

a first structure formed by winding a overwinding wire around a first cylindrical member (see Fig. 1),

a second coil structure formed by winding the second coil structure around a second cylindrical member 6 (see Fig. 2),

a third coil structure formed by winding the second coiled structure around a third cylindrical member 7, the third cylindrical member having a diameter of about 0.7 mm, and an emitter material deposited on the coil (see Fig. 3). Thomas is silent regarding the limitation of “the third cylindrical member having a diameter of at least 1 mm”.

However, Thomas teaches that various dimensions and wire sizes can be used, enabling a person skilled in the art to make and use the invention without undue experimentation (see Col. 2, lines 26-28). Further, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide “the third cylindrical member having a diameter of at least 1 mm”, since Thomas teaches that various dimensions and wire sizes can be used, and further, it is generally considered to be within the ordinary skill in the art to adjust, vary, select or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value.

Regarding claims 2 and 3, claims 2 and 3 are rejected over the reasons stated in the rejection of claim 1.

Referring to claims 4 and 5, Thomas discloses the second coiled structure having more than 85 turns per inch (see Col. 2, line 41).

Referring to claim 8, Thomas discloses the emitter material comprising an oxide selected from the group consisting of Ba, Sr, Ca, Zr and combinations thereof (see Col. 1, lines 13-14, and Col. 2, lines 62-64 and 71-72).

Regarding claims 10 and 11, claim 10 and 11 are rejected over the reasons stated in the rejection of claim 1.

Regarding claim 13, Thomas discloses the claimed invention except for the limitation of “the secondary coil being 30 mm in length”. However, Thomas teaches that various dimensions and wire sizes can be used, enabling a person skilled in the art to make and use the invention without undue experimentation (see Col. 2, lines 26-28). Further, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide “the secondary coil being 30 mm in length”, since Thomas teaches that various dimensions and wire sizes can be used, and further, it is generally considered to be within the ordinary skill in the art to adjust, vary, select or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value.



Art Unit: 2879

7. Claims 8, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al. (US 5,629,586) in view of Thomas (US 3,003,077).

Regarding claim 8, Yasuda discloses the claimed invention except for the limitation of “the emitter material comprising an oxide selected from the group consisting of Ba, Sr, Ca, Zr and combinations thereof”.

However, in the same field of endeavor, Thomas discloses a coil having an emitter made of an oxide of Ba, Sr, Ca, Zr and combinations thereof, and teaches such compounds to be traditional and well known in the art (see Col. 1, lines 12-14, and Col. 2, lines 62-63 and 71-72). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an oxide of Ba, Sr, Ca, Zr and combinations thereof as the emitter material since Thomas teaches such oxides to be traditional and well known in the art.

Referring to claim 16, Yasuda-Thomas discloses the emitter mix including carbonates selected from the group consisting of Ba, Sr, Ca, Zr and combinations thereof (see '077, Col. 2, lines 62-63). Same reasons for combining stated in claim 8 apply.

Regarding claim 18, Yasuda discloses the claimed invention except for the limitation of “dissolving the first, second and third cylindrical members in an acid bath”. Yasuda discloses the coil being made of tungsten (W), the cylindrical members being made of molybdenum (Mo) and said cylindrical members being dissolved by usual Mo solvents (see Col. 3, lines 50-51).

However, in the same field of endeavor, Thomas discloses a coil made of (W) with cylindrical members made of (Mo), and teaches an acid bath which removes the Mo without removing the (W), to be customary for removing such cylindrical members (see Col. 2, lines 53-58). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention

Art Unit: 2879

was made to use the acid bath disclosed by Thomas as the (Mo) solvent disclosed by Yasuda, since Thomas teaches the acid bath to be customary for removing (Mo) cylindrical members, removing the (Mo) without removing the (W) of the coil.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al. (US 5,629,586).

Yasuda discloses the claimed invention except for the limitation of “the third cylinder member having a diameter of 1.2-1.5 mm”. However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide “the third cylinder member having a diameter of 1.2-1.5 mm”, since it is generally considered to be within the ordinary skill in the art to adjust, vary, select or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value.

9. Claims 1, 6, 7, 15 and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Van Kemenade et al. (US 6,049,164) in view of Yasuda et al. (US 5,629,586).

Regarding claim 1, Van Kemenade discloses a discharge lamp comprising an envelope, a discharge-sustaining fill sealed inside the envelope; first and second electrodes for providing a discharge, the electrodes being coils and comprising an emitter material. Van Kemenade fails to disclose the electrodes being a triple-coiled wire.

However, in the same field of endeavor, Yasuda discloses a discharge lamp with a triple-coiled wire with the purpose of enhancing thermionic emission of electrons, preventing the lamp end supports from being heat-deteriorated, and increasing the lamp's life. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the triple-coiled wires disclosed by Yasuda to the lamp of Van Kemenade in order to enhance thermionic emission of electrons, preventing the lamp end supports from being heat-deteriorated, and increasing the lamp's life.

Referring to claim 6, Van Kemenade-Yasuda discloses the third coiled structure being at least 10 mm in length (see '164, Col. 3, lines 44-45)

Referring to claim 7, Van Kemenade-Yasuda discloses the lamp being a T8 lamp (see Col. 3, line 21) and the third coiled structure being at least 10 mm. Van Kemenade-Yasuda is silent regarding the limitation of "the third coiled structure being 11-12 mm in length".

However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide "the third coiled structure with a length of 11-12 mm", since it is generally considered to be within the ordinary skill in the art to adjust, vary, select or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value.

Regarding claim 15, Van Kemenade-Yasuda discloses the method for forming a coil for a fluorescent lamp, the method comprising:

Art Unit: 2879

winding a wire around a first cylindrical member and a current carrying wire to form a first coiled structure;

winding the first coiled structure around a second cylindrical member to form a second coiled structure; and

winding the second coiled structure around a third cylindrical member to form a third coiled structure, the coiled structure having a diameter of at least 1 mm; and coating the third coiled structure with an emitter. Same reasons for combining stated in claim 1 apply.

Regarding claim 22, claim 22 is rejected over the reasons stated in the rejection of claim 7.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas (US 3,003,077) as applied to claim 13 above, and further in view of Admitted Prior Art (APA) and Clark (US 5,864,209).

Thomas discloses the claimed invention except for the limitation of “the amount of emitter material being 10-15 mg”. The APA discloses that conventional coils usually have about 7-8 mg of emitter on a coil (see Page 8, Paragraph [00029], lines 7-9).

In the same field of endeavor, Clark discloses a lamp comprising a thermionic material (see Col. 6, lines 29-32) and teaches that an unavoidable characteristic of thermionic electron emission is the sputtering away of the emitter material since as the emitter material decreases, the cathode voltage increases and the intensity of the lamp is substantially reduced (see Col. 1, lines 53-58; and Col. 5, lines 5-6, 14-16). Further, Clark discloses that lamps comprising a triple-coiled wire have a significantly increased effective and useful life due to an increase in the

Art Unit: 2879

amount of emitter material provided by the shape of said triple-wire coiled, which holds a greater volume of emitter than prior lamps (see Col. 2, lines 47-50; and Col. 5, lines 16-22). Moreover, Clark teaches that too much emitter material can lead to a reduced lamp life due to problems of brittleness and flaking of said emitter material.

It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide "the amount of emitter material being 10-15 mg", since the APA discloses that conventional coils usually have about 7-8 mg of emitter on a coil, and Clark teaches that a lamp comprising a triple-coiled wire have a significantly increased effective and useful life due to an increase in the amount of emitter material provided by the shape of said triple-wire coiled, which holds a greater volume of emitter than prior lamps. Also, Clark establishes an upper boundary to the amount of emitter material since too much emitter material can lead to a reduced lamp life due to problems of brittleness and flaking of said emitter material. Further, it is generally considered to be within the ordinary skill in the art to adjust, vary, select or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value.

11. Claim <sup>23</sup>~~22~~ is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Kemenade-Yasuda as applied to claim 22 above, and further in view of Admitted Prior Art (APA) and Clark (US 5,864,209).

Van Kemenade-Yasuda discloses the claimed invention except for the limitation of “the amount of emitter material being 10-15 mg”. The APA discloses that conventional coils usually have about 7-8 mg of emitter on a coil (see Page 8, Paragraph [00029], lines 7-9).

In the same field of endeavor, Clark discloses a lamp comprising a thermionic material (see Col. 6, lines 29-32) and teaches that an unavoidable characteristic of thermionic electron emission is the sputtering away of the emitter material since as the emitter material decreases, the cathode voltage increases and the intensity of the lamp is substantially reduced (see Col. 1, lines 53-58; and Col. 5, lines 5-6, 14-16). Further, Clark discloses that lamps comprising a triple-coiled wire have a significantly increased effective and useful life due to an increase in the amount of emitter material provided by the shape of said triple-wire coiled, which holds a greater volume of emitter than prior lamps (see Col. 2, lines 47-50; and Col. 5, lines 16-22). Moreover, Clark teaches that too much emitter material can lead to a reduced lamp life due to problems of brittleness and flaking of said emitter material.

It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide “the amount of emitter material being 10-15 mg”, since the APA discloses that conventional coils usually have about 7-8 mg of emitter on a coil, and Clark teaches that a lamp comprising a triple-coiled wire have a significantly increased effective and useful life due to an increase in the amount of emitter material provided by the shape of said triple-wire coiled, which holds a greater volume of emitter than prior lamps. Also, Clark establishes an upper boundary to the amount of emitter material since too much emitter material can lead to a reduced lamp life

Art Unit: 2879

due to problems of brittleness and flaking of said emitter material. Further, it is generally considered to be within the ordinary skill in the art to adjust, vary, select or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value.

### ***Prior Art of Record***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Ikeda et al. (US 5,079,478), Ward et al. (US 6,465,939), and Funada et al. (US 4,680,505), disclose a fluorescent lamp with a triple-coiled wire and an emitter material coating the wire.

Fujioka et al., in JP 61-288366, discloses a triple-coiled wire which reads on at least claims 1, 9 and 15.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to German Colón whose telephone number is 703-305-5987. The examiner can normally be reached on Monday thru Friday, from 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 703-305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Art Unit: 2879

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



gc

June 6, 2003



NIMESHKUMAR D. PATEL  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800